

## PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT  
(PCT Article 36 and Rule 70)

REC'D 02 FEB 2005

WIPO PCT

Applicant's or agent's file reference INT1104/MAJR	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/ZA 03/00168	International filing date (day/month/year) 06.11.2003	Priority date (day/month/year) 08.11.2002
International Patent Classification (IPC) or both national classification and IPC E21D15/48		
Applicant GRINAKER-LTA LIMITED		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 1 sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the opinion</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul>

Date of submission of the demand 04.06.2004	Date of completion of this report 03.02.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280, HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  Garrido Garcia, M Telephone No. +31 70 340-4468



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/ZA 03/00168

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-10 as originally filed

**Claims, Numbers**

2-15 as originally filed  
1 filed with telefax on 23.12.2004

**Drawings, Sheets**

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/ZA 03/00168

5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).  
*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	1-15
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-15
Industrial applicability (IA)	Yes: Claims	1-15
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/ZA 03/00168

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: WO 00/14384 A

D2: US-A-4 565 469

**Inventive step**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1 to 15 does not involve an inventive step in the sense of Article 33(3) PCT.

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document) a mine support which includes a deformable tubular sleeve (60), a first material with a first strength characteristic inside a first interior portion (one or more of the compartments 78, 80 or 82) of the sleeve, and filling said first interior portion of the sleeve, and a second material with a second strength characteristic which differs from the first strength characteristic (see page 13, paragraph 4, line 5) inside a second interior portion of the sleeve (the remaining of the compartments 78, 80 and 82), and filling said second interior portion of the sleeve (see page 13, paragraph 4, line 4). In use, if for example the containers 78 and 80 are filled with the first material, and the containers 82 with the second material, the first material will overlie the second material, or vice versa, i.e one material will overlie the other material, thus anticipating this feature of claim 1.

The subject-matter of claim 1 differs from this known mine support in that the first material has a density in excess of 900 kg/m<sup>3</sup>, and in that the second material has a density less than 1000 kg/m<sup>3</sup>. However, these density parameters fall within the range of densities that is common for the materials used in mine supports, normally cementitious mixtures, and therefore cannot render the claim inventive, as the skilled person manufacturing mine supports as disclosed in document D1 would, by employing the materials proposed also in document D1 (see page 8, paragraphs 3 to 6), inevitably arrive at a mine support having

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/ZA 03/00168

the characteristics of claim 1. Claim 1 of the present application cannot therefore be considered as involving an inventive step (Article 33(3) PCT).

Dependent claims 2 to 14 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, see documents D1 and D2 and the corresponding passages cited in the search report.

**Claim 15**

Also claim 15 is regarded as not involving an inventive step in the sense of Article 33(3) PCT.

The document D1 is considered to be the closest prior art to the subject-matter of claim 15, and discloses (the references in parentheses applying to this document) a mine support which includes a rigid or semi-rigid box (see page 3, line 5) an interior of which is filled with a first cementitious grout (see page 8, paragraph 3) of a first density which extends over a length of the sleeve, and with a second material of a second density (see page 8, paragraph 5).

According to document D1, "one or more of the compartments 78, 80, 82 at or near the centre of the tubes 66, 68, 70 is filled with a first load bearing material so that a central pillar with suitable load bearing capabilities is formed, and thereafter the remainder of the compartments 78, 80, 82 are filled with a second load bearing material which has a lower load bearing capability" (see page 13, paragraph 4). Document D1 teaches a general way of filling the compartments of the mine support, leaving at the discretion of the user the choice of the number of compartments at each tube that is to be filled. It is thus envisaged the following arrangement, should the desired load bearing capabilities of the resulting support so require it: filling all of the compartments 78 and 80 with a first load bearing material, and then filling the remaining compartments (that is, 82) with a second load bearing material. Inspection of figure 3 reveals that the first load bearing material would then extend over 60% of the axial length of the sleeve, as required by claim 15.

Regarding the composition of the load bearing materials employed, document D1

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

---

International application No. PCT/ZA 03/00168

- discloses several examples in page 8, paragraphs 3 to 6, and the use of aerated cementitious material is one foreseeable choice for the realisation of the invention, e.g. in
- the light of document D2 (see column 3, lines 25 to 29). Claim 15 of the present application cannot therefore be considered as involving an inventive step (Article 33(3) PCT).

CLAIMS

1. A mine support which includes a deformable tubular sleeve, a first material with a density in excess of 900kg/m<sup>3</sup> and with a first strength characteristic inside a first interior portion of the sleeve and filling said first interior portion of the sleeve, and a second material with a density less than 1000kg/m<sup>3</sup> and with a second strength characteristic which differs from the first strength characteristic inside a second interior portion of the sleeve and filling said second interior portion of the sleeve, and wherein, in use, one material overlies the other material.
- 10 2. A mine support according to claim 1 wherein the first interior portion is adjacent the second interior portion.
3. A mine support according to claim 1 or 2 wherein the first interior portion has a length, in an axial direction of the sleeve, which is greater than the length of the second interior portion in the axial direction of the sleeve.
- 15 4. A mine support according to any one of claims 1 to 3 wherein the first interior portion has a length in an axial direction of the sleeve of from 70% to 90% of the axial length of the sleeve.
5. A mine support according to any one of claims 1 to 4 wherein the first interior portion has a length in an axial direction of the sleeve of from 10% to 30% of the axial length of the sleeve.
- 20 6. A mine support according to any one of claims 1 to 5 wherein the first material is a lightweight cementitious mixture.